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09/197,096	11/20/1998	MARK ALISTAIR POLETTI	0805774-0001	9905

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EXAMINER

LAO, LUN S

ART UNIT PAPER NUMBER

2643

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/197,096

Applicant(s)

POLETTI, MARK ALISTAIR

Examiner

Lun-See Lao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,3,5,7,9,15,16 and 19-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-3,5,7,9,13,15,16,19,20-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Introduction

1. This action responds to amendment filed on 09/09/2002. Applicant's has added new claims 21-41 and cancelled claims 1,4,6,8,10-12,14,17-18 and in view of newly discovered prior art.

Specification

2. The spacing of the lines of the specification is such as to make reading and entry of amendments difficult. New application papers with lines double spaced on good quality paper are required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 2-3,5 are rejected under 35 U.S.C. 102(b) as being anticipates by Orban (US PAT. 4,412,100).

Regarding claim 2, Orban teaches that a musical instrument preamplifier system comprising:

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a filtering means for splitting an input signal into two (see fig.3, 10) or more separate frequency bands comprising a similar phase (12,50) response for each frequency band;

two or more non-linear circuits (15,21,27,60,62,64), each of which distorts the input signal component of one of the frequency bands; and

a summing (19,25,31,) network for recombining said frequency bands;

wherein said filtering means (12,14,16,46 and 50,51,52,53) comprises a cascade of $(2^N - 1)$ pairs of even poled low (14,16) and high (51,52) pass filters arranged such that each pair splits the incoming frequency band in two, where N is the number of stages of pairs in the cascade, and wherein for the nth stage subsequent to the first, each low or high pass filter pair is preceded by $(2^{n-1} - 1)$ all pass filters (12,50) with phase response corresponding to the $(2^{n-1} - 1)$ other low and high pass filter phase response in that stage such that the phase response of each stage is similar for each frequency band.

Regarding claims 3,5, Orban teaches that musical instrurrnt preamplifier system of cascade has two stages of two poles low (see fig.3, (14,16 and 51,52)) and high pass filter pairs; and each low (14,16, 11) and high (51,52,58) pass filter pair is a state variable filter.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 7,9, 13, are rejected under 35 U.S.C. 103(a) as being unpatentable over Orban (US PAT.4, 412,100) in view of Koichiro (JP 404142598A).

Regarding claim 7, Orban fails to teach that a musical instrument preamplifier system of the filtering means further comprises variable cross-mixing after one or more stages of said filtering means.

However, Koichiro teaches that a musical instrument preamplifier system of the filtering means further comprises variable cross-mixing after one or more stages of said filtering means (see fig.2).

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Koichiro into Orban to provide pseudostereo phonic sound for the system.

Regarding claim 9, Orban teaches that a musical instrument preamplifier system comprising:

a filtering means for splitting an input signal (see fig.3, in) into two or more separate frequency bands comprising a similar phase response for each frequency band (10);

two or more non-linear circuits (15,21,27), each of which distorts the input signal component of one of the frequency bands; and a summing (19,25) network for recombining said frequency bands; and

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further comprising low pass filtering means (17,25,29) after said non-linear circuits (15,21,27) to reduce high frequency distortion products; wherein said low pass filtering means is combined with said summing network (19,25) such that in successive stages the lowest frequency band is low pass filtered, with a low pass filter and the other frequency bands are all pass filtered (12,47,50,56) with an all pass filter corresponding to said low pass filter, said lowest frequency band is then combined with the next lowest frequency band, and comprising subsequent stages of repeated filtering and combining until all frequency bands are combined, such that the phase response over all frequency bands through the low pass filtering and summing (19,25) network is identical, Orban fails to teach that the filtering means further comprises variable cross-mixing after one or more stages of said filtering means.

However, Koichiro teaches that the filtering means further comprises variable cross-mixing after one or more stages of said filtering means (see fig.3).

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Koichiro into Orban to provide pseudostereo phonic sound for the system.

Regarding claim 13, Orban teaches that preamplifier comprising:

a filtering means (see fig.3 (14,16 and 51,52)) for splitting an input signal into a multiple number of separate frequency bands, comprising a cascade of $(2^N - 1)$ pairs of even poled low (14,16) and high (51,52) pass filters arranged such that each pair splits the incoming frequency band in two, where N is the number of stages of pairs in the cascade, each low (16,14,53) and high (51,52,35) pass filter pair forming a state

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variable filter, and in each n th stage subsequent to the first, each low or high pass filter pair is preceded by $(2^{n-1} - 1)$ all pass filters having phase responses of the $(2^{n-1} - 1)$ low (14,16,11,53,56) or high (51,52,58,45,35) pass filter pairs in the other channels such that the phase response of each stage is similar for each frequency band, and a multiple number of non-linear circuits (15,21,27), each arranged to distort the input signal component of one of the frequency bands; and

a summing (19,25) network for recombining said frequency bands including low pass filtering means (14,16,11,17,25) arranged such that in successive stages the lowest frequency band is low pass filtered with a low pass filter and the other frequency bands are all pass filtered with an all pass filter corresponding to said low pass filter, said lowest frequency band is then combined with the next lowest frequency band and subsequent stages of repeated filtering and combining until all frequency bands are combined, such that the phase response over all frequency bands through the low pass filtering and summing (19,25) network is identical, Orban fails to teach that filtering means further comprising variable cross-mixing after one or more of said stages of filtering,

However, Koichiro teaches that filtering means further comprising variable cross-mixing after one or more of said stages of filtering (see fig.2).

Therefore, it would have been obvious to one of ordinary skill in the art to utilize the teaching of Koichiro into Orban to provide pseudostereo phonic sound for the system.

7. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Orban (US PAT. 4,412,100) in view of Kuroki (US PAT. 5,841,875)

Regarding claim 15, Orban teaches filtering means comprises a cascade of $2^N N - 1$ pairs of even poled low (14,16,11) and high (51,52,58) pass filters arranged such that each pair splits the incoming frequency band in two, where N is the number of stages of pairs in the cascade, and wherein for the nth stage subsequent to the first, each low (14,16,11,53,56) or high (51,52,58,35,45) pass digital filter pair is preceded by $(2^{n-1} - 1)$ all pass digital filters with phase response corresponding to the $(2^{n-1} - 1)$ other low and high pass digital filter phase response in that stage such that the phase response of each stage is similar for each frequency band, but Orban fails to teach that a digital musical instrument preamplifier system comprising:

a digital filtering means for splitting an input sample signal into two or more separate frequency bands comprising a similar phase response for each frequency band; two or more non-linear digital circuits, each of which distorts the input signal component of one of the frequency bands; and a digital summing network for recombining said frequency bands;

However, Kuroki teaches that a digital musical instrument preamplifier system comprising:

a digital filtering means (see fig.29, 71) for splitting an input sample signal into two or more separate frequency bands comprising a similar phase response for each frequency band; two or more non-linear digital circuits (72), each of which distorts the

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input signal component of one of the frequency bands; and a digital summing network (74) for recombining said frequency bands.

Therefore, it would have been obvious to one of ordinary skill in the art to utilize the teachings of Kuroki in Orban to provide signal processing more accurate for the system.

Regarding claim 16 Orban teaches that a digital musical instrument preamplifier system of each digital low pass and high pass filter is obtained by a bilinear transformation of a corresponding low pass (see fig.3, (14,16,11,53,56) and high pass (51,52,58,35,45) analogue filter, and the all pass filters are obtained by a bilinear transformation of a corresponding all pass analogue filter (50,54,12,47).

8. Claims 19-21,24-25,28, 30-33,35-36,38,40, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroki (US PAT. 5,841,875) in view of Maag et al (US PAT. 5,892,833).

Regarding claim 19, Kuroki teaches that a digital musical instrument preamplifier system comprising:

a digital filtering means for splitting an input sampled signal into two or more separate frequency bands comprising a similar phase response for each frequency band;

two or more non-linear digital circuitry (see fig.29,72) each of which distorts the input signal component of one of the frequency bands; and

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a digital summing network (74) for recombining said frequency bands;

wherein the digital filtering means further comprises variable digital cross-mixing after one or more stages of said digital filtering means (see col.8 line 62-col.9 line8); and further comprising digital low pass filtering means (71) after said digital non-linear circuits (72) to reduce high frequency distortion products, but Kuroki fails to teaches that a digital filtering means for splitting an input sampled signal into two or more separate frequency bands comprising a similar phase response for each frequency band.

However, Maag teaches that a digital filtering means (see fig.6c, 208) for splitting an input sampled signal into two or more separate frequency bands comprising a similar phase response for each frequency band (211a - 211b and 212a-212n).

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Maag into Kuroki to provide in spite of the various approaches to performing "equalization", performing it in a high quality fashion, with little phase shift and in a simple and inexpensive manner.

Regarding claim 20, Maag teaches that a musical instrument preamplifier system of low pass filtering means (see fig.6a (211a-n)) is combined with said summing network (220) such that it successive stages the lowest frequency band is low pass filtered with a low pass filter and the other frequency bands are all pass filtered with an all pass filter corresponding to said low pass filter, said lowest frequency band is then combined with the next lowest frequency band, and comprising subsequent stages of repeated filtering and combining until all frequency bands are combined, such that the

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phase response over all frequency bands through the low pass filtering and summing network is identical (see col.3 lines 1-30).

Regarding claim 21, Kuroki teaches that a musical instrument preamplifier system comprising:

a filtering means for splitting an input signal into two or more separate frequency bands comprising a substantially equi-phase response for each frequency band;

two or more non-linear circuits (see fig.29, 72), each of which distorts one of the frequency bands; and

a summing (see fig.29, 74) network for recombining said frequency bands (see col.3 line 55-col.4line 7), Kuroki fails to teach a filtering means for splitting an input signal into two or more separate frequency bands comprising a substantially equi-phase response for each frequency band.

However Maag teaches a filtering means (see fig.6a, 208) for splitting an input signal into two or more separate frequency bands comprising a substantially equi-phase (see 6a, (212a-n)) response for each frequency band.

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Maag into Kuroki to provide in spite of the various approaches to performing "equalization", performing it in a high quality fashion, with little phase shift and in a simple and inexpensive manner.

Regarding claim 24-25, Maag teaches that a musical instrument preamplifier system of each low and high pass filter pair is a state variable filter (see col.3 lines 1-30).

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Regarding claim 28, Kuroki teaches that musical instrument preamplifier system of low pass filtering means (see fig.29, 71) after said non-linear circuits (72) to reduce high frequency distortion products.

Regarding 30-32, Magg teaches that a musical instrument preamplifier system of the non-linear circuit (see fig.6a, (211a –212n and 215a,b, 216a-n) for each frequency band has a different gain than those in the other frequency bands; and non-linear circuits (see fig.6a,(211a –212n and 215a,b,216a-n) for higher frequency bands have a higher minimum gain than the non-linear circuits for lower frequency bands; and the distortion by said non-linear circuits is variable (see fig.6a,(211a –212n and 215a,b,216a-n).

Regarding claim 33, Kuroki teaches that a digital musical instrument preamplifier comprising:

two or more non-linear digital circuits (see fig.29,72), each of which distorts one of the output frequency bands; and

a digital summing network (74) for recombining said frequency bands, Kuroki fails to teach a digital filtering means for splitting an input sampled signal into two or more separate output frequency bands comprising a substantially equi-phase response for each frequency band.

However, Maag teaches a digital filtering means (see fig.6a, 208) for splitting an input sampled signal into two or more separate output frequency bands comprising a

substantially equi-phase (see fig.6a, (211a-b and 212a-n)) response for each frequency band.

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Maag into Kuroki to provide in spite of the various approaches to performing "equalization", performing it in a high quality fashion, with little phase shift and in a simple and inexpensive manner.

Regarding claims 35-36, Maag teaches that a digital musical instrument preamplifier each digital low pass and high pass filter (see fig.6a (211a-b and 212a -n)) is obtained by a bilinear transformation of a corresponding low pass and high pass analogue filter (see fig.1), and the all pass filters are obtained by a bilinear transformation of a corresponding all pass analogue filter; and digital filtering means comprises linear phase finite impulse response filters (see col.7 lines 50-67).

Regarding claim 38, Maag teaches that a digital musical instrument preamplifier of digital low pass filtering means (see fig.6a (211a-b and 212a -n)) after said digital non-linear circuits (see fig.6a (211a-b and 212a -n and 215a-b, 216a-n)) reduce high frequency distortion products.

Regarding claim 40, Kuroki teaches a musical instrument preamplifier comprising:
a plurality of non-linear circuits (see fig 29,72) coupled to a plurality of the outputs to distort respective output frequency bands; Kuroki fails to teach that a filtering means with a first filter network, the network including: an input, a plurality of outputs, and a

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plurality of band splitter filters to split a signal on the input into a plurality of substantially equi-phase frequency bands for the outputs.

However, Maag teaches that a filtering means with a first filter network, the network including: an input (see fig.6a,204), a plurality of outputs, and a plurality of band splitter filters (20) to split a signal on the input into a plurality of substantially equi-phase frequency bands for the outputs.

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Maag into Kuroki to provide in spite of the various approaches to performing "equalization", performing it in a high quality fashion, with little phase shift and in a simple and inexpensive manner.

9. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroki (US PAT. 5,841,875) in view of Orban (US PAT. 4,412,100).

Regarding claim 41, Kuroki teaches that a musical instrument preamplifier system comprising:

a filtering means (see fig.29,71) for splitting an input signal into plurality of substantially equi-phase frequency band outputs, and

a plurality of non-linear circuits (72) coupled to filter means to distort respective output frequency bands, but Kuroki fails to teaches that the filtering means includes a cascade of a first filter network, and one or more subsequent filter networks, each network including: an input, a plurality of outputs, and a plurality of band splitter filters to split a signal on the input into a plurality of frequency bands for the outputs,

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wherein for one or more of the subsequent networks, the input of each is coupled to one output of another network via a filter to provide substantially equi-phase frequency bands on the network's outputs, and wherein outputs of some of the networks form frequency band outputs of the filter means.

However, Orban teaches that that the filtering means includes a cascade of a first filter network, and one or more subsequent filter networks, each network including:

an input (see fig.3, in), a plurality of outputs (10), and a plurality of band splitter filters (14,16,51,52) to split a signal on the input into a plurality of frequency bands for the outputs, wherein for one or more of the subsequent networks, the input of each is coupled to one output of another network via a filter to provide substantially equi-phase frequency bands on the network's outputs, and wherein outputs of some of the networks form frequency band outputs of the filter means (see fig.3).

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Kuroki into the teaching of Orban, so that the system provide the signal processor can generally be described as a distributed crossover system for use with bandpass filters containing internal clippers. A unique (series/parallel) crossover configuration with favorable summation of properties is used.

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10. Claims 22-23, 29,34, 39, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroki (US PAT. 5,841,875) and Maag et al (US PAT. 5,892,833) as applied to claims 21,33, and further in view of Orban (US PAT. 4,412,100).

Regarding claims 22,33, Kuroki and Maag differs from claims 22,34 in not disclosing that a musical instrument preamplifier of filtering means comprises a cascade of $2^N - 1$ pairs of even-poled low and high pass filters arranged such that each pair splits the incoming frequency band in two, where N is the number of stages of pairs in the cascade, and wherein for the nth stage subsequent to the first, each low or high pass filter pair is preceded by $(2^{n-1} - 1)$ all pass filters with phase response corresponding to the $(2^{n-1} - 1)$ other low and high pass filter phase response in that stage such that the phase response of each stage is similar for each frequency band.

However, Orban teaches that a musical instrument preamplifier of filtering means comprises a cascade of $2^N - 1$ pairs of even-poled low (see fig.3, (14,16,11,53,56) and high (51, 52,58,45,35) pass filters arranged such that each pair splits the incoming frequency band in two, where N is the number of stages of pairs in the cascade, and wherein for the nth stage subsequent to the first, each low or high pass filter pair is preceded by $(2^{n-1} - 1)$ all pass filters (12,47 and 50,54) with phase response corresponding to the $(2^{n-1} - 1)$ other low (see fig.3,(14,16,11,53,56) and high (51, 52,58,45,35) pass filter phase response in that stage such that the phase response of each stage is similar for each frequency band.

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Maag and Kuroki into the teaching of Orban, so that the system provide the

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signal processor can generally be described as a distributed crossover system for use with bandpass filters containing internal clippers. A unique (series/parallel) crossover configuration with favorable summation of properties is used.

Regarding claim 23, Orban teaches that a musical instrument preamplifier system of cascade has two stages of two pole low (see fig.3, (14,16,11,53,56) and high (51, 52,58,45,35) pass filter pairs.

Regarding claims 29,39, Orban teaches that a musical instrument preamplifier system of low pass filtering means (see fig.3, (14,16,11,17,25)) is combined with said summing network (19,25) such that it successive stages the lowest frequency band is low pass filtered with a low pass filter and the other frequency bands are all pass filtered (12,47,50,54) with an all pass filter corresponding to said low pass filter, said lowest frequency band is then combined with the next lowest frequency band, and comprising subsequent stages of repeated filtering and combining until all frequency bands are combined, such that the phase response over all frequency bands through the low pass filtering and summing (19,25,31) network is identical.

11. Claims 26-27,37, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroki (US PAT. 5,841,875) and Maag et al (US PAT. 5,892,833) as applied to claims 21,33, and further in view of Koichiro (JP404142598A)

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Regarding claims 26-27,37, Kuroki and Maag differ from claims 26-27,37 in not disclosing that musical instrument preamplifier system of the filtering means further comprises variable cross-mixing after one or more stages Of said filtering means.

However, Koichiro teaches that musical instrument preamplifier system of the filtering means further comprises variable cross-mixing after one or more stages of said filtering means (see fig.2).

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Maag and Kuroki into the teaching of Koichiro, so that the system provide pseudostereo phonic sound.

12. Applicant's arguments with respect to claim 2,9,15,19 have been considered but moot in view of the new grounds of rejection.

Conclusion

13. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to: (703) 872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (703) 305-2259 The examiner

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can normally be reached on Monday-Friday from 8:00 to 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz, can be reached on (703) 305-4708.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (703) 306-0377.

Lao, Lun-See
Patent Examiner
US Patent and Trademark Office
Crystal Park 2
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CURTIS KUNTZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600